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A PARTIAL REVISION OF THE GENUS *NOTOMASTUS* (POLYCHAETA: CAPITELLIDAE) WITH A DESCRIPTION OF A NEW SPECIES FROM THE GULF OF MEXICO

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Abstract.—An emended diagnosis for the genus *Notomastus* (Polychaeta: Capitellidae) is proposed with two closely related genera, *Rashgua* Wesenberg-Lund and *Paraleiocapitella* Thomassin, considered as junior synonyms. A new species of *Notomastus* from the Gulf of Mexico, *N. daueri,* is described.

Recent benthic ecological studies in the northern Gulf of Mexico revealed that an undescribed capitellid polychaete was a prominent component of the infauna of relatively shallow silty sand habitats. Description of this species necessitated expansion of the generic diagnosis of *Notomastus* Sars, 1851. Close examination of the literature indicated that two closely related genera, *Rashgua* Wesenberg-Lund, 1949 and *Paraleiocapitella* Thomassin, 1970 are sufficiently similar to be considered as synonyms of *Notomastus*.

The holotype and one set of paratypes of the new species are deposited in the National Museum of Natural History (USNM), Smithsonian Institution, Washington, D.C. An additional paratype is deposited in Allan Hancock Foundation (AHF), University of Southern California, Los Angeles, California.

Family Capitellidae Grube, 1862
Genus *Notomastus* Sars, 1851, emended

Rashgua Wesenberg-Lund, 1949:336.
Paraleiocapitella Thomassin, 1970:86.

Type-species.—*Notomastus latericeus* Sars, 1851:199.

Diagnosis.—Thorax with an achaetous peristomium and 11 setigerous segments; epithelium wholly or partly smooth, tessellated, or areolated. Prostomium conical or triangular, with or without palpode; eyespots present or lacking. First setiger with or without capillary setae in neuropodia; thereafter thoracic segments with capillary setae only in both rami or with hooks in neuropodia of last 1–3 setigers. Nephridial apertures absent, limited to either thorax or abdomen, or present on a few segments in both regions. Abdominal neuropodia with hooded hooks only; notopodia with hooks only, present throughout the abdomen, restricted to anterior segments, or completely absent. Branchiae present or lacking; if present, as nonretractile, simple expansions or prolongations of noto- and/or neuropodia or as eversible branched tufts from notopodial ridges. Pygidium with or without appendages.

Discussion

Remarks on *Rashgua* Wesenberg-Lund, 1949: Wesenberg-Lund (1949:336) erected the genus *Rashgua,* characterized as having a thorax consisting of an

achaetous peristomium and 11 segments with capillary setae only in both noto- and neuropodia and an abdomen with hooded hooks only. Wesenberg-Lund presumably distinguished *Rashgua* from the closely related genus *Notomastus* on the basis that the former genus had abdominal notopodia "perfectly devoid of hooks" (1949:337) while the latter had (by original definition) hooks in both rami of the abdomen. However, Hartman (1947:415) described a species of *Notomastus, N. lobatus,* which agrees with *Rashgua* in lacking abdominal notosetae. Although Hartman (1947:416) did not emend the generic diagnosis of *Notomastus* to accommodate *N. lobatus,* her observation that "notopodial tori are believed to be absent" was apparently overlooked by Wesenberg-Lund (1949).

The original description of the genotype of *Rashgua, R. rubrocincta,* was based on anterior fragments only. This species agrees with *N. lobatus* in most characters but, based strictly on the literature account of *R. rubrocincta,* the 2 appear to differ slightly in the configuration of abdominal tori; these 2 species are the only known capitellids completely lacking abdominal notosetae.

A new species of *Notomastus* described in this paper has notopodial hooks in anterior abdominal segments only. This structure is intermediate between the conditions of no abdominal notosetae (*Rashgua* and *Notomastus lobatus*) and notosetae throughout the abdomen (all other known *Notomastus*). The presence or absence (complete or partial) of notosetae in the abdomen is now recognized as a variable character in the genus *Notomastus*. Therefore, the genus *Rashgua* is herein designated a junior synonym of *Notomastus* Sars. *Notomastus rubrocinctus* (Wesenberg-Lund, 1949) is considered a new combination.

Remarks on *Paraleiocapitella* Thomassin, 1970: Thomassin (1970:86) erected the genus *Paraleiocapitella* which is characterized as having a thorax with an achaetous peristomium and 11 setigerous segments; an incomplete first setiger (i.e. notopodia only) is followed by 9 setigers with capillary setae only in both rami and a last thoracic segment with capillary setae only in the notopodia and hooded hooks only in the neuropodia; abdominal segments are provided with hooks only in both noto- and neuropodia.

Paraleiocapitella was presumably easily distinguished from the nearly identical genus *Notomastus* based on the presence of hooks in thoracic neuropodia in the former genus and by original description, capillary setae only in the thorax of *Notomastus*. However, prior to 1970, descriptions of at least 2 species of *Notomastus* with thoracic neuropodial hooks had been published although the generic description was not technically revised. *Notomastus precocis* Hartman, 1960, has hooks only in the last 3 thoracic neuropodia. Hartman (1965) also described *Notomastus teres* which is characterized as having hooded hooks only in the last 2 neuropodia. Day (1973), in agreement with Hartman's expanded diagnosis of *Notomastus* but seemingly unaware of the genus *Paraleiocapitella,* described *Notomastus americanus* which has a thoracic setal formula identical to that of the genotype of *Paraleiocapitella, P. mossambica.*

In the present study, numerous immature specimens representing 3 additional species of *Notomastus, N. hemipodus* Hartman, 1947, *N. lobatus* Hartman, 1947, and *N. daueri,* n. sp., were found with hooded hooks only or mixed fascicles of capillary setae and hooks in as many as 5 posterior thoracic neuropodia and rarely in 1–2 notopodia. With very few exceptions, a distinct pattern of setal development toward the adult arrangement (i.e. thoracic setal formula) was recognized

in each of these species. Similar conditions were also noted in juveniles of several other capitellid genera. The subject of setal development will be discussed in greater detail in a forthcoming paper. Tentatively outlined, the replacement of hooded hooks by capillary setae in the thoracic neuropodia of *Notomastus* is as follows: 1) juveniles are provided with hooks only in neuropodia of several segments in the posterior one-half of the thorax, 2) as the worm grows, hooks are apparently lost (shed, broken or resorbed?) from the ventral position in the setal fascicle and replaced by capillary setae emerging from the superior position; the replacement of setae progresses until all hooks in a "changing" fascicle are replaced by capillary setae and the process continues in a relatively predictable manner toward the posterior thoracic segments until the adult condition is reached.

In summary, the presence and/or location of hooded hooks in thoracic neuropodia of both juveniles and adults is recognized as a highly variable character in the genus *Notomastus* and perhaps many other capitellid genera; thus the genus *Paraleiocapitella* Thomassin is herein designated a junior synonym of *Notomastus* Sars. *Notomastus mossambicus* (Thomassin, 1970) will be considered a new combination pending personal examination of type-material.

Notomastus daueri, new species

Fig. 1a–g

Material examined.—LOUISIANA: Gulf of Mexico: Approx. 29.3 km SSW Grand Isle: 28°56′12″N, 90°04′07″W, 27.7 m, silty clay, holotype (LW&F, col., 16 April 1980, USNM 71442), 2 paratypes (USNM 71443), 18 specimens; 8 specimens, 21 Aug. 1980, same location; 2 specimens, 8 Sept. 1980, same location. Approx. 33.9 km SSW Grand Isle: 28°53′06″N, 90°01′30″W, 33.5 m, clayey silt, 1 paratype (LW&F, col., 8 Sept. 1980, AHF Poly 1361). Approx. 37.0 km SSW Grand Isle: 28°51′06″N, 90°04′21″W, 33.2 m, 1 specimen, 21 Aug. 1980. MISSISSIPPI: Gulf of Mexico: IEC 732 MO Sta. 014, approx. 5.9 km S Ship Island pass, 30°10.32′N, 88°55.00′W, 10 m, muddy sand, 1 specimen (IEC, col., June 1980); Mississippi Sound: sta. 043, approx. 3.6 km N Petit Bois Island, 30°14.48′N, 88°25.63′W, 5.6 m, muddy sand, 1 specimen (Vittor & Assoc., col., 22 Oct. 1980).

Description.—Length of largest complete specimen (holotype) approximately 65 mm, width 1.1 mm, 234 setigerous segments. Lengths of 7 additional complete specimens ranged from 40 to 52 mm, widths 0.3 to 0.9 mm, with up to 197 setigers.

Color light tan to brown in alcohol. Thorax slightly inflated through setigers 4–5, surface epithelium faintly areolated; following thoracic segments nearly smooth except for ventral biannulation. Abdominal epithelium smooth throughout.

Prostomium short, broadly triangular in dorsal view, with 2 inconspicuous nuchal slits near posterior border; eyespots absent. Achaetous peristomium slightly wider than long, approximately 1½ to 2 times as long as following segment; eversible pharynx bulbous, coarsely papillated on proximal two-thirds, smooth distally. Thoracic setigers about 3 times as wide as long. Anteriormost notopodia dorsolateral, well separated, but approach middorsally by setigers 6–7; neuropodia ventrolateral in position throughout thorax. Anterior 10 setigers with 15–20 capillary setae per fascicle in both rami; last thoracic segment (setiger 11) with capillary setae only in notopodia and fascicles of 12–20 hooded hooks only in neuropodia (Fig. 1a). Nephridial apertures (1 pair on each segment) located in

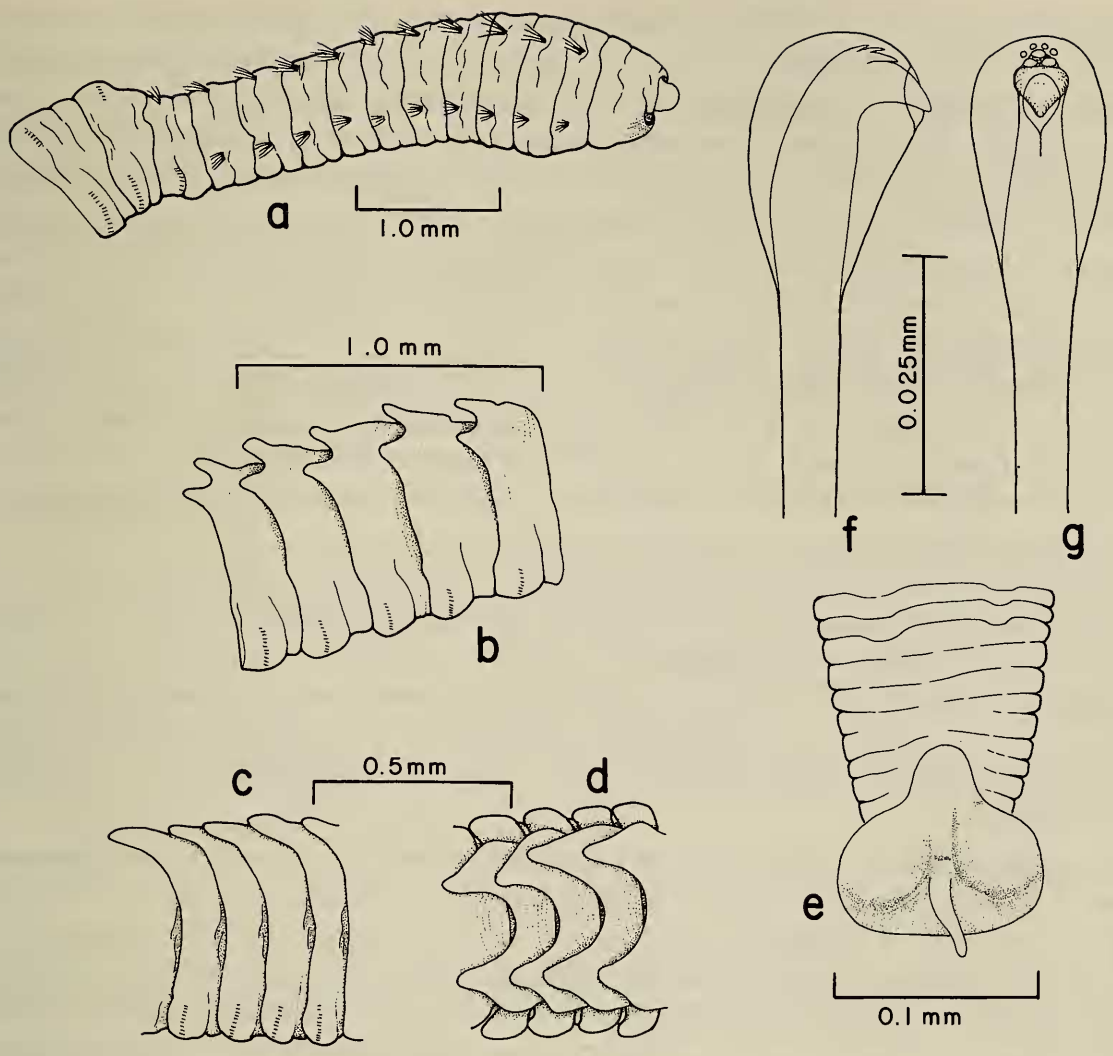

Fig. 1. *Notomastus daueri:* a, Lateral view of anterior end showing thorax and first 2 abdominal segments; b, Dorsolateral view of midabdominal segments; c–d, Lateral and dorsal views of posterior abdominal segments; e, Dorsal view of pygidium; f–g, Lateral and frontal views of neuropodial hooded hook from midabdomen.

segmental groove between each of last 4 thoracic segments. Lateral organs present on all thoracic setigers as a minute pore between noto- and neuropodium; appearing as a small ovoid structure just above neuropodial tori in abdominal segments, present at least through midabdomen but becoming increasingly less conspicuous moving posteriorly. Transition from thorax to abdomen marked by setael change in notopodia from capillary setae to hooks, increase in number of neurosetae per fascicle and slight broadening of segments.

Anterior abdominal segments of approximately same length as those of the posterior thorax, gradually lengthening to the midabdominal region where they are 1½ to 2 times as long as wide; thereafter segments becoming increasingly shorter.

Branchial lamellae first emerging from anterior abdominal segments (about setiger 60 in holotype) as short posteriolateral swellings of the notopodia, increasing in length posteriorly (Fig. 1b), developing into large triangular projections which overlap the following segment in the posterior region (Figs. 1c–d).

Abdominal parapodia with multidentate hooded hooks only; hooks consisting

of a main fang surmounted by 3 teeth in a triangular arrangement and a second row of 4–5 smaller denticles (Figs. 1e–f), similar in structure to those in the last thoracic neuropodia. Anteriormost notopodia with 15–20 setae per fascicle on short, slightly elevated tori; notosetae decreasing rapidly in number posteriorly, disappearing completely 5–15 segments after the appearance of branchial lobes. Neurosetal fascicles on well-defined glandular ridges at posterior margin of each segment, extending from lateral to near midventral position; neurosetae increasing in number posteriorly to as many as 40 hooks per fascicle by midabdomen, then decreasing in number through posterior abdomen to 1–2 per fascicle in last 8–10 segments; noticeable reduction in size (and perhaps number) of denticles above the main fang of hooks in far posterior region with some hooks appearing unidentate under oil immersion in last few segments. Neuropodial tori of latter segments enlarged at posterior margin as a shallow, somewhat cup-shaped process (dorsal view) which may also be branchial in function.

Pygidium funnel-shaped with single digitate median cirrus (Fig. 1g).

Remarks.—Variations from the thoracic setal arrangement of adults were observed in numerous small specimens (juveniles?) of *Notomastus daueri.*

Notopodia of setigers 10 and 11 were rarely found with mixed fascicles of capillary setae and hooks. Neuropodia of setigers 7–11 may have capillary setae only, mixed setal fascicles, hooded hooks only, or combinations of these in a given segment.

Notomastus daueri differs from most other species of the genus in having some thoracic neuropodia with hooded hooks instead of capillary setae only. The 4 known species of *Notomastus* with hooks in one or more thoracic neuropodia, *N. precocis* Hartman, 1960, *N. teres* Hartman, 1965, *N. mossambicus* (Thomassin, 1970; new combination proposed in this paper), and *N. americanus* Day, 1973, all have notopodia only on setiger 1 whereas *N. daueri* has a complete first setiger.

Notomastus daueri is known to occur in the northern Gulf of Mexico off Louisiana and Mississippi in shallow subtidal muddy sands.

Etymology.—This species is named in honor of Dr. Daniel M. Dauer, my good friend and former graduate advisor, in an attempt to express my sincere appreciation for his unselfish guidance over the past several years.

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